REMARKS/ARGUMENTS

The amendments to Claims 1-3 are supported throughout the specification, wherein the use of compounds of general formula (I) as an antioxidant are described. See, for example, specification page 3, lines 15ff, the several Examples, and specification page 24, lines 12-13. Note also that the claimed formula (I) has been corrected to delete an inadvertent "A" in the Y-substituted ring. No new matter has been entered.

The amended claims are patentable over Ghosh, Kwong, and Yamamoto.

None of these references disclose or suggest a method of using the compounds of either Claim 1 or Claim 3 herein as an antioxidant. Instead, Ghosh discloses agents for treating mitochondria associated disease, Kwong discloses starting materials for photosensitive polymers, and Yamamoto discloses elastomer compositions comprising certain cross-linking agents. Nowhere in any of the cited references is a compound according to present formula (I) suggested for use as an antioxidant.

The Examples herein measure the oxygen absorption initiation time of several compounds according to the present claims as an index of determining their oxidation-inhibiting properties. See, for example, Example 1 at specification page 15. As noted at specification page 24, lines 11ff, these compounds can be used as antioxidants in plastics, rubber, petroleum products, etc. Because the new use of a compound is itself separately patentable, In re Shetty, 195 USPQ 753 (CCPA 1997), attached, Applicants respectfully submit that the claims as presently amended describe an invention that is patentable over the prior art, and early notification to this effect is respectfully requested.

Respectfully submitted,

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In re Shetty, 195 USPQ 753 (C.C.P.A. 1977)
195 USPQ 753
In re Shetty
U.S. Court of Customs and Patent Appeals
No. 77-515
Decided November 17, 1977
566 F2d 81

Headnotes

PATENTS

[1] Patentability -- Invention -- Specific cases -- Chemical (▶ 51.5093)

It is obvious and there is sufficient motivation to person skilled in chemical or pharmaceutical arts to substitute ethylene link between adamantane ring and amine for structurally-similar prior art methylene link.

[2] Patentability -- Invention -- In general (▶ 51.501)

Patentability -- Invention -- Specific cases -- Chemical (▶ 51.5093)

Fact that claimed method might be inherent in teachings of prior art is immaterial if one of ordinary skill in art would not appreciate or recognize that inherent method; mere hindsight assertion that corresponding dosages of prior art compounds useful for combatting microbial infestation, in light of which claimed compound is obvious, renders claimed method for appetite control obvious is untenable; inherency of advantage and its obviousness are entirely different questions; obviousness cannot be predicated on what is unknown.

Particular Patents

Particular patents -- Adamantane Derivatives

Shetty, Anorectic Adamantane Derivatives and Method of Using Same, rejection of claim 52 *affirmed*; rejection of claims 2-5 and 51 *reversed*.

Case History and Disposition

Appeal from Patent and Trademark Office Board of Appeals.

Application for patent of Bola Vithal Shetty, Serial No. 171,736, filed Aug. 13, 1971. From decision rejecting claims 2-5, 51, and 52, applicant appeals. Modified.

Attorneys

Carl A. Hechmer, Jr., and Edward A. Sager, both of Philadelphia, Pa., for appellant.

Joseph F. Nakamura (Jack E. Armore, of counsel) for Commissioner of Patents and Trademarks.

Judge

Before Markey, Chief Judge, Rich, Baldwin, and Lane, Associate Judges, and Morgan Ford, Associate Judge, United States Customs Court.

Opinion Text

Opinion By:

Rich, Judge.

This appeal is from that portion of the July 30, 1976, decision of the Patent and Trademark Office (PTO) Board of Appeals (board) rejecting claims 2-5, 51, and 52 in application serial No. 171,736, filed August 13, 1971, entitled "Anorectic Adamantane Derivatives and Method of Using Same." The board rejected the claims under 35 USC 103 on new grounds, as provided in 37 CFR 1.196(b), as obvious from Brake [1] in view of Narayanan, [2] Bernstein et al., [3] and Bernstein. [4] We affirm the rejection of composition claim 52 and reverse the rejection of method claims 51 and 2-5.

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[1] U.S. Patent No. 3,489,802, issued Jan. 13, 1970, on application serial No. 610,779, filed Jan. 23, 1967.

[2] U.S. Patent No. 3,501,511, issued Mar. 17, 1970, on application serial No. 661,781, filed Aug. 21, 1967.

[3] U.S. Patent No. 3,270,036, issued Aug. 30, 1966, on application serial No. 493,899, filed Oct. 7, 1965.

[4] U.S. Patent No. 3,320,249, issued May 16, 1967, on application serial No. 470,930, filed July 9, 1965.

The Invention

The invention pertains to a method, as defined in claims 51 and 2-5, of curbing appetite in animals by administering certain adamantane compounds. [5] The invention also pertains to the unit dosage form of a composition for curbing appetite comprising such an adamantane compound and a pharmaceutically acceptable carrier as defined in claim 52.

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[5] Adamantane is the trivial name assigned to tricyclodecane. Its structural formula can be represented in any of the following ways:

Graphic material consisting of a chemical formula or diagram set at this point is not available. See text in hard copy or call BNA at 1-800-372-1033.

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In the specification, appellant identifies his claimed compounds as follows:

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or their pharmaceutically acceptable acid addition salts, wherein:

R_1= H, lower alkyl, aralkyl, aralkyl substituted with NH_2, OH, OCH_3, halogen, alkyl, NO_2; phenoxyalkyl or phenoxyalkyl substituted with NH_2, OH, OCH_3, halogen, alkyl, or NO_2; acyl such as formyl or acetyl.

R_2= H, lower alkyl, COO-lower alkyl, aralkyl, aralkyl substituted with NH_2, OH, OCH_3, halogen, alkyl, NO_2; phenoxyalkyl or phenoxyalkyl substituted with NH_2, OH, OCH_3, halogen, alkyl, or NO_2; acyl such as formyl or acetyl.

$R_1$and R_2can be joined together to form, with the nitrogen, a heterocyclic ring (e.g.

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)

R_3= H, lower alkyl, or alkynyl

R_4= H, lower alkyl, or alkynyl

R_5= H, OH, halogen, or lower alkyl

R_6= H, OH, halogen, or lower alkyl

$R_5$and R_6together may represent a carbonyl oxygen

R_7= H, lower alkyl, halogen, hydroxy, alkoxy, amino or substituted amino, trifluoromethyl, sulfamyl, nitro, phenyl

R_8, R_9, R_{10}, R_{11}, $R_{12}$are any of R_7

n = 0 to 4

m = 0 to 4

Independent claim 51 defines the "method of curbing appetite in an animal which comprises administering to the animal an amount effective to curb appetite of a compound" of the above formula.

The References

Brake describes a process for improving the yield of a-methyl multicyclic methylamines, one of which is a-methyl-1-adamantanemethylamine, illustrated as:

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where R is * * *.

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and is described as being useful as an antiviral agent in animals.

Narayanan teaches adamantyl sulfonamide compounds, useful as antimicrobial agents, e.g., as antiviral agents, of the formula:

Graphic material consisting of a chemical formula or diagram set at this point is not available. See text in hard copy or call BNA at 1-800-372-1033.

wherein R and R 1each is hydrogen, halogen, lower alkyl, phenyl or phenyl-lower alkyl, R 2is hydrogen or lower alkyl, R 3is hydrogen, lower alkyl, lower alkoxy, halogen or halo-lower alkyl and n is 0, 1 or 2, and salts thereof.

Narayanan also teaches the use of his compounds in dosages corresponding to those of appellant.

Bernstein et al. pertains to adamantyl biguanides of the formula:

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and to acid-addition salts thereof.

In Formula I, R and R_1each is hydrogen, halogen, lower alkyl, phenyl or lower alkoxy, R_2, $R_3$and R_4each is hydrogen, lower alkyl or phenyl-lower alkyl and n is 0 or 1.

These compounds are hypoglycemic agents effective in reducing blood sugar content in mammals.

The compounds of the Bernstein patent are illustrated by the following formula:

Graphic material consisting of a chemical formula or diagram set at this point is not available. See text in hard copy or call BNA at 1-800-372-1033.

and to acid-addition and quaternary ammonium salts thereof.

These compounds are adamantyl derivatives of phenothiazines, therapeutically active as central nervous system depressants.

The Rejection

The examiner rejected appellant's claimed composition and method as obvious under 35 USC 103 in view of the teaching in Brake of administering to animals structurally similar adamantane derivatives "analogous" to those claimed. The Bernstein and Narayan an patents were cited to show similar compounds in the art. The examiner reasoned that the composition claim would have been obvious from the prior art because the respective compounds differ merely by a methylene group, i.e., the instant compounds have at least an ethylene link between the adamantane ring and the amine, whereas the prior art compound has a methylene link. This "minor molecular modification" was further asserted to be made obvious by the Bernstein and Narayanan patents, which disclose lower alkylene links between adamantane and other

moieties and are directed to pharmaceutical uses.

The board treated the examiner's rejection as relying upon Brake alone and as citing the Bernstein and Narayanan patents to show the state of the art. The board did not sustain the rejection of claims 2-5, 51, and 52 as obvious from Brake alone because Brake's failure to disclose an amount of his compound effective as an antiviral agent renders unobvious the administration of "adjacent homologs of Brake's compound 'in an amount effective to curb appetite' * * *." Similarly, the board did not agree that appellant's composition in an "appetite curbing amount" would have been obvious from Brake alone.

Under 37 CFR 1.196(b), the board made a new ground of rejection under 35 USC 103 for obviousness from Brake in view of the Bernstein and Narayanan patents. The board agreed with the examiner that appellant's compounds having an ethylene linkage would have been obvious in view of Brake's corresponding adjacent homolog (methylene linkage). Relative to the method claims, the board found sufficient motivation in the prior art to administer Brake's compound and adjacent ethylene "homologs" as antiviral agents, and concluded that administering appellant's compounds in appetite-curbing amounts would have been obvious from Brake and Narayanan since the amounts suggested by Narayanan to achieve antiviral effects encompass the amounts intended and claimed by appellant.

The Arguments

Appellant contends that, after refusing to sustain the examiner's rejection on the basis of Brake alone, the board erred in rejecting the method claims by considering Narayanan in addition to Brake. Appellant argues that Narayanan's reference to dosage for treating viral infection is an improper basis for rejection. It is urged that the board mistakenly assumed that appetite-suppressant effects of appellant's compounds would be readily recognized from treating virus-infected animals with a related compound. It is also urged that the board ignored differences in treatments for viral infection and obesity, and that therefore Narayanan's dosage cannot be said to result in effective anorexia. Relative to the claimed composition, appellant states that there is an appreciable difference between the structure of the compounds of the claim and the prior art compounds, and that the former would not have been obvious because the motivation to make the required structural variation is absent.

The solicitor responds by arguing that in the absence of comparative evidence of any unexpected difference in the properties of appellant's and Brake's compounds, the compounds of the claim would have been obvious from and unpatentable over the structurally closely related compound disclosed by Brake. It is *argued* that Brake and Narayanan render obvious appellant's pharmaceutical carrier and "unit dosage form." As to the method claims, the solicitor contends that Narayanan discloses adamantyl compounds as antiviral agents in dosages that correspond to and would suggest similar and inherently appetite-curbing amounts of the Brake antiviral compound. The solicitor supports the board position that because appellant's compounds are homologous and there is sufficient motivation in the prior art to administer Brake's compound as an antiviral agent, appellant's different purpose does not render the method claims unobvious.

Opinion

We note at the outset that the ethylene linkage of appellant's compound closest to the prior art (b-(1-adamantyl)-a-methylethylamine) is referred to by the examiner as "analogous" to the methylene linkage of Brake's a-methyl-1-adamantanemethylamine and by the board as a "homolog." Since the appellant has not challenged either of these classifications, we proceed on the assumption that he accepts the inference that his compounds, whether homologs or analogs, would be expected to have similar properties to the prior art compound. Whether the adamantyl compounds in question are properly classified according

to the usual definitions of "homolog" and "analog," we shall not consider inasmuch as appellant has not *argued* the point.

The solicitor has taken the position that absent comparative evidence demonstrating any unexpected difference in the properties of the compounds, the claimed composition would have been obvious from and unpatentable over the structurally closely related compound disclosed in Brake. On the other hand, appellant contends that the presence of the ethylene rather than the methylene group constitutes "an appreciable difference in the claimed compound and the prior art compounds," and relies on In re Taborsky, 502 F.2d 775, 183 USPQ 50 (CCPA 1974) for support of his argument that without some teaching of motivation to make the required molecular variation, a finding of obviousness based on structural similarity is improper.

[1] Regarding this issue of structural similarity, we agree with the solicitor and the PTO position. The examiner noted the difference of a mere methylene group between the compound of the claim and the prior art compounds, cited the Bernstein and Narayanan references showing the state of the art as prior art knowledge of use of lower alkylene links between adamantane and other moieties, and concluded that "this minor molecular modification would clearly be obvious to the pharmaceutical chemist." We do not accept appellant's contention that the adjacent alkylene link in question constitutes an "appreciable difference" in the compounds. We think that a person skilled in chemical and/or pharmaceutical arts would not hesitate to extend the alkylene linkage of the prior art compound. Further, we note that appellant's compound closest to the prior art and its synthetic preparation are disclosed in Narayanan as one of a group of compounds for producing his adamantyl sulfonamide. This leaves no room for doubt that the prior art knowledge renders appellant's compound structurally similar and provides sufficient motivation to make it.

Moreover, appellant has no basis for relying on Taborsky, supra. Unlike the present case, the prior art of record in Taborsky *expressly limited* the scope of "halogen" to exclude appellant's claimed fluorosalicylanilide compounds and stated "' *several disadvantages in practice* '" of free salicylanilides. 502 F.2d at 781, 183 USPQ at 55 (emphasis supplied). Appellant here has shown no such reason to preclude the conclusion that appellant's compounds are structurally similar to the prior art compounds.

Confronted with PTO evidence of obviousness, appellant has offered no evidence of unobviousness, as by showing an actual difference in properties between his compounds and the prior art compounds. In re Hoch, 57 CCPA 1292, 428 F.2d 1341, 166 USPQ 406 (1970). Appellant merely shows that his novel compounds are appetite suppressants whereas the reference compounds are not so known. Further, appellant has not indicated whether his compounds are antiviral, as is Brake's prior art compound. Presented with such an absence of comparative or other evidence with respect to the properties of the compounds and the claimed composition, we hold that composition claim 52 would have been obvious from and unpatentable over the prior art.

[2] Regarding method claims 51 and 2-5, the solicitor agrees with the board that:

> * * * the compounds of claim 51 are obvious from and unpatentable over the corresponding Brake compound and the Narayanan disclosure of a dosage which *corresponds* to appellant's disclosed appetite curbing dosage (therefore, *inherently* appetite curbing). [Emphasis added.]

We cannot accept this conclusion. The issue here is whether the claimed method of curbing appetite would have been obvious. That appellant's "amount effective to curb appetite" corresponds to or inheres in Narayanan's amount "to combat microbial infestation" does not persuade us of the obviousness of appellant's method. As this court said in In re Naylor, 54 CCPA 902, 905-06, 369 F.2d 765, 768, 152 USPQ 106, 108 (1966):

> [Inherency] is quite immaterial if, as the record establishes here, one of ordinary skill in the art would not appreciate or recognize that inherent result. * * *
>
> * * * we find nothing in the record which would afford one of ordinary skill reason to anticipate that a trial * * * [of the combined prior art teachings] would be successful in producing the polymer recited in the claims.

The Patent Office has failed to show a reasonable expectation, or some predictability, that Brake's compound would be an effective appetite suppressant if administered in the dosage disclosed by Narayanan. The mere hindsight assertion that corresponding dosages render appellant's method obvious is untenable.

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Prior to appellant's disclosure, none of the adamantane compounds in any of the references before us suggested a use, much less a dosage, for curbing appetite. What we said in In re Spormann, 53 CCPA 1375, 1380, 363 F.2d 444, 448, 150 USPQ 449, 452 (1966), relative to inherency applies equally here:

> As we pointed out in In re Adams, 53 CCPA 996, 356 F.2d 998, 148 USPQ 742 [(1966)], the inherency of an advantage and its obviousness are entirely different questions. That which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown.

Accordingly, the decision of the board is affirmed as to claim 52 and reversed as to claims 51 and 2-5.

- End of Case -